

## REMARKS

5 Item number 3 of Detailed Action dated 9/29/03

The Examiner quotes the abstract from Brown et al. (U.S. Patent Number 6,260,414, hereinafter referred to as Brown). In which Brown discloses a cholesteric liquid crystal **fluid level indicator that determines the level of a cooled liquid**. The federal circuit has consistently held obviousness as a question  
10 of law based on factual inquiries mandated by 35USC§103<sup>1</sup>. The factual inquiries include: scope and content of prior art, level of ordinary skill in the art, differences between claims and the prior art, and the secondary considerations such as commercial success<sup>2</sup>. When Brown's claims are read in light of the specification, one skilled in the art would understand the bounds of the claim (i.e.  
15 must reasonably be apprised of the scope of the invention) *Miles Labs. Inc. v. Shandon Inc.*, 997 F.2d 870, 875, 27 USPQ 2d 1123, 1126 (Fed Cir. 1993). Clearly the scopes of these two inventions, Brown's Liquid Level indicator and our Ullage indicator are extremely different as described below.

**The Applicant's invention solves a different problem than the reference,**  
20 **and such different problem is recited in the claims.** See *In re Wright*, 6 USPQ 2d 1959 (1988). The Examiner stated "Brown discloses a cholesteric liquid crystal fluid "level indicator that determines the level of a cooled liquid...". The applicant's invention does not perform the same operation as Brown's Liquid Level device. The invention (as stated) is for use on a tank of compressed gas, not  
25 liquid, to forecast the effect of internal pressure change that will occur as the tank changes temperature after pressurization as determined by the common gas law.

The Examiner stated "With respect to claim 8, though the Examiner admits that the device is used for a beer keg, it is still used on a storage tank and it does *measure gas pressure changes within the tank* (see column 12 lines 38 through  
30 64 for the basic operation of the device where a color change in relation to gas

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<sup>1</sup> Aktibolaget Karlstads Mekaniska Werkstad v. I.T.C., 705 F.2d 1565, 1575 (1983); Stratoflex, Inc. v. Aeroquip Corp., supra note 9 at 713 F.2d 1535; *In re De Plauwe*, 736 F.2d 699, 703 (1984); *Vandenberg v. Dairy Equipment Co.*, 740 F.2d 1560, 1565 (1984); *Jervis B. Webb Co. v. Southern Systems, Inc.*, 742 F.2d 1388, 1393 (1984).

<sup>2</sup> *Jervis B. Webb v. Southern Systems, Inc.*, Supra note 27 at 742 F.2d 1393-1397.

and temperature is clearly disclosed)...” **This interpretation of Brown is incorrect.** The cited reference does not teach what the Examiner relies upon that it is supposedly teaching. Column 12 lines 38 through 64 state that Brown’s device works on the principal that a keg of beer (or similar container holding fluid) will warm at different rates where the holding container is in contact with the level of fluid versus the level of gas. In the exact words of Brown column 12 line 63, “the invention shows different colors adjacent the beer than it does the gas.” **The Examiner has inserted references that are not in Brown’s claims or device description, that Brown’s device *measures gas pressure changes within the tank* is false, it simply measures where the gas stops and the fluid begins.**

Continuing with same paragraph as above, “...relation to gas and temperature is clearly disclosed) and this could obviously be adapted to that exact purpose by one of ordinary skill in the art.” The Examiner’s words are traversed stating that Brown’s device “could obviously be adapted to the exact purpose by one of ordinary skill in the art.” There is no gas law physics (art) involved in Brown’s invention. If the Examiner’s position here is to be held, then any new process which, once it is created and understandable, could not be patented. There is nothing in Brown’s invention that teaches gas law physics or its creative adaptation to our concept. Brown does not teach pressure changes or pressure drop as determined by the common gas law in regards to adiabatic temperature change. **This is an unsuggested modification in which the prior art lacks any suggestion that the reference should be modified in a manner required to meet the claims.** Totally new to Brown is our process of using the sensing of temperature to trigger, on the basis of the gas law, an indication of gas availability in the future. Brown deals only with the instant indication and what it means in that instant. Relating usefully to the future from a current indication is creative beyond any simple level indicator based on any method of sensing, including Brown’s.

In addition, the statutory basis of rejection due to obviousness is 35 USC §103. A key point to consider as stated by this statute is “that the subject matter as a whole would have been obvious at the time the invention was made.” The court stated that it is proper to consider the conception of a new and useful

improvement along with the actual means of achieving the improvement. See *In re Horton* 121 USPQ 218, 219 (CCPA 1959). According to the court: "...though the structure may be but a simple expedient when the novel concept is realized, that structure may not be obvious to the skilled worker in the art where the *prior art has failed to suggest the problem or conceive of the idea for its elimination.*"

5 **Brown does not *plainly* state any advantages in his claim to modify or change his invention in a means that could be used to determine ullage, pressure drop, or adapting for pressurized containers.**

The applicant traverses the Examiner's opinion when stating "With respect to claim 9, figure 3 and column 11 line 44 through column 12 line 64 disclose coatings formed in distinct areas, each area sensitive to a particular color-changing temperature. Figure 5 shows, and column 10 lines 36 through 49 describe that the strip could comprise indicia, which could be of any type, including numbers, which would be useful for displaying information of the tank contents." Stating that "Indicia" of Brown could represent the pressure drop calculations is incorrect and the Examiner has inserted a reference that is not made by Brown. Brown states in column 10 line 44 through 46, " The indicia could display a logo, company name, instructions, or other useful information. The indicia is an alternative element of the instant invention." In his statement,

10 **Brown implies that the indicia are one-dimensional information, not implying that the information is a function or effect of the temperature being sensed.** In order to infer that "Other useful information" would include pressure drop (or similar) for an ending temperature of a container of warm, compressed gas, Brown would have to reference this in his specifications. Again, Brown does not teach

15 **pressure changes or pressure drops as determined by the common gas law in regards to temperature change.**

The applicant traverses the Examiner's opinion that "With respect to claim 2, though it is not specifically disclosed, the use of a "Painting" technique to apply the indicator as disclosed in the application would be well within the preview of one of ordinary skill in the art." This opinion is traversed because as previously stated, the concept of the Ullage Meter could not be considered obvious. If the concept is not obvious, then various applications of the concept could not be

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considered obvious. Claim 2 simply states that the concept of the Ullage Meter could be directly applied to a tank so that it comprises a permanent component of said tank.

With respect to the Examiner's objection to Claim 3, this is a dependent claim applying to a new concept as described in Claim 8. Is the Examiner determining that no patent for anything can involve film technology, stickers, or similar adhesion without being pre-empted by Brown? The applicant traverses the Examiner's statement regarding Claim 3.

The Examiner states "With respect to claim 4, the areas are shown in figure 3 and column 11 line 44 through column 12 line 64 to be organized in groups, each group corresponding to a final temperature of the tank." In the referenced section, Brown discloses temperature ranges that would best suit the varying ideal temperature for storing or holding different types of beer. He identifies three ranges that would best suit beer storage as stated in column 12 lines 19 through 21 "Three formulations have been found to accommodate the three basic temperature ranges for ideal beer and determining beer level". Combining the three temperature ranges would give a temperature range from approximately 34°F to 60°F. The applicant traverses the Examiner's opinion because multiple segments described in both inventions do not perform the same task. The Examiner misunderstood the reference by stating that on Brown's device "Each group corresponds to a final temperature." **This is incorrect, as Brown's device does not indicate, based on pre-determined final temperatures, the result of the temperature changes on the contents of the container. Brown's device shows fluid levels within the container and the best holding/storage temperature for the contents of that container.** Again the Examiner has added a reference to Brown's device that is not stated in the specifications or the claims. The Examiner stated "...each group corresponding to a final temperature." Brown does not specify a "Final" or ending temperature, merely holding temperatures and very slight fluctuations in temperature as a refrigerator door is opened or the cooling compressor temporarily stops.

The Examiner states "With respect to claim 5, the indications represent the amount of liquid and gas available compared to a filled tank at the same

pressure.” The Examiner’s position on this statement is incorrect and the applicant traverses the Examiner’s opinion for the following 3 reasons: 1) The two devices are very different in that Brown’s device shows the level where the fluid ends and the gas begins. The applicant’s device relies on the common gas laws to determine pressure changes as the temperature changes within the tank, **the applicant’s device does not indicate a level and Brown’s device does not forecast pressure change.** 2) Brown’s device will indicate where the fluid ends and the gas begins, so a person can look at the tank and estimate how much of the tank is gas. Brown does not take into account the pressure within the tank and how temperature will effect this pressure. 3) Because liquids do not compress, two containers at varying temperatures will still have nearly the same amount of liquid.

The Examiner states “With respect to claim 6, the numbers can represent any useful information, such as pressure, as disclosed in column 10 lines 36 through 49.” The applicant traverses this statement because the Examiner has inserted a reference that is not made by Brown. Brown does not teach pressure changes or pressure drops as determined by the common gas law in regards to temperature change. Claim 6 is also a dependent claim applying to a new concept as described in claim 8.

Item Number 4 of Detailed Action dated 9/29/03, Response to Arguments

The Examiner states, “The type of indicia used on the device is irrelevant to the device operation, and can be chosen to fit the application desired. Therefore, the Examiner feels that his rejections based on the prior art references are valid with respect to the claims.” The applicant traverses the Examiner’s opinion regarding this statement because the key is the information that is deciphered from the temperature readings. Many inventions use temperature readings as a base operation and the information that is derived from that temperature for a particular application is where the value of the invention is seen. **Because of their particular applications, temperature readings have very different and novel purposes yielding unexpected results.** Brown lacks any suggestion that the

reference could be modified in a manner to meet the applicant's claims. The Examiner's rejections based on his prior art references are unjustified.

Item Number 5 of Detailed Action dated 9/29/03

5           The Examiner requested further, more substantial proof of the long-standing need for the invention. Included are signed affidavits from individuals with expert experience and knowledge of the scuba diving industry. These individuals confirm the long-standing, yet-unsolved-need arguments. These statements affirm that the invention would not be considered obvious to a scuba professional. The applicant also includes pages from two unrelated and unsolicited publications exhibiting the invention. The newsletter, Air Bubbles, published by a dive club in the Boston area, features an in depth article by Rob Falk regarding the need for such a device (see page 3 of Air Bubbles article). California Diving News, a monthly newsmagazine, features the device in the New Gear section, page 18.

          In the affidavits attached, when reference is made to

          "Honest Phil," the examiner needs to know that  
          "Honest

20           Phil" is the subject invention, i.e., it is a card for application to a gas storage tank consisting of squares of temperature sensitive materials with incorporated numbers to indicate ullage. The word "honest" is applied because the tank owner uses this to provide himself with a real value for the actual useful gas supply achieved by pressurization, as opposed to accepting the

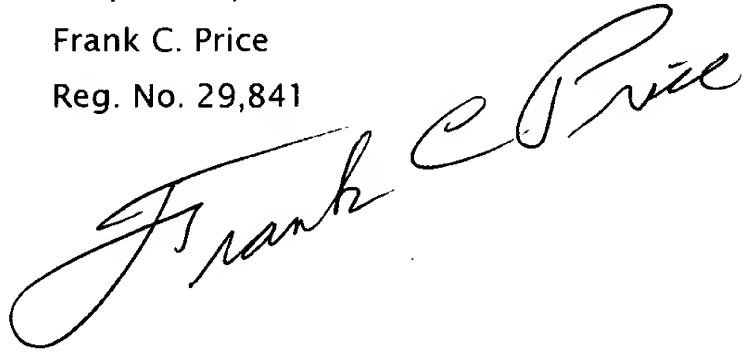
pressure in a warm tank that will cool and lose pressure.

By thoroughly addressing every point of the Examiner's communication, we  
5 hope we have presented a solid case for our application.

Respectfully submitted,

Frank C. Price

Reg. No. 29,841

A handwritten signature in cursive script that reads "Frank C. Price". The signature is written in black ink and is positioned diagonally across the page, overlapping the typed name and registration number.

## Insert for Brief Description of the Drawings

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Fig. 3 is a cross section view of a gas storage tank illustrating the  
application of the temperature sensitive elements, containing  
10 indications, to the tank surface.



Insert for Specification below paragraph 0017 in the present Office file

In Figure 3 can be seen a storage tank wall 14 with two types of color-changing coating 15 and 16 applied to the tank external surface.

5 Imbedded in the film coatings 15 can be seen the cross sections of printed indications, 16, each defining future tank ullage when the temperature sensitive film of a particular area 17, for example, is activated by the tank temperature. The same is true of indications 18 on the tank wall 14, the indications each being painted over by a paint  
10 19 that is activated by a particular tank wall temperature. The marks 20 denote the boundaries between two paints of different temperature sensitivities.

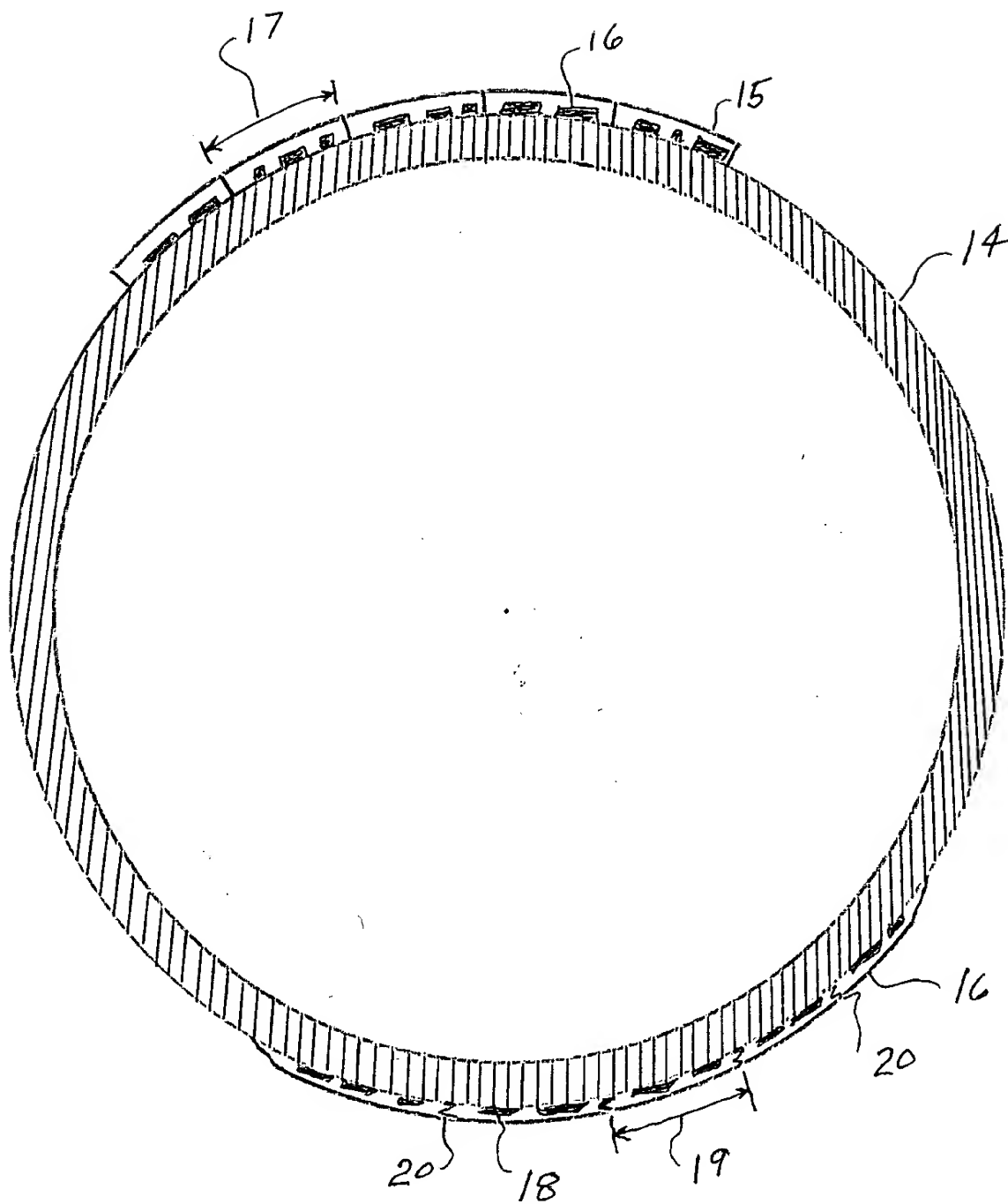


FIG. 3